IS 5934 (1999): Rolling Bearings - Chamfer Dimensions - Maximum Values [PGD 13: Bearing]

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IS 5934 : 1999
ISO 582 : 1995

(Reaffirmed 2004)

भारतीय मानक

रोलिंग बेयरिंग — शैम्फर आयाम — अधिकतम मान — विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

ROLLING BEARINGS — CHAMFER DIMENSIONS — MAXIMUM VALUES — SPECIFICATION

(Second Revision)

ICS 21.100.20

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 3

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with ISO 582 : 1995 'Rolling bearings — Chamfer dimensions — Maximum values', issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendations of the Rolling Bearings Sectional Committee and approval of the Light Mechanical Engineering Division Council.

The original standard was published in 1970 and subsequently revised in 1979. The first revision was brought out in 1979 by harmonizing it with ISO 582 : 1979. The second revision of this standard has been taken up to align it with the latest version of ISO 582.

In order to ensure that the chamfers on rolling bearings are compatible with the dimensions of parts which come into contact with the rolling bearings, values of the chamfer dimensions, of which the minimum limit is of primary interest to the bearing users and application designer, are required.

The purpose of this standard is to achieve interchangeability of rolling bearings by specifying the chamfer dimensions, and to minimize the risk of incompatibility in bearing applications.

The text of ISO Standard has been approved as suitable for publication as Indian Standard without deviations. In the adopted standard, certain conventions are, however, not identical to those used in Indian Standards. Attention is drawn specially to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a full stop (.) as the decimal marker.

In the adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 15 : 1981	IS 5669 : 1987 General plan of boundary dimensions for radial rolling bearings (*second revision*)	Identical
ISO 104 : 1994	IS 5932 : 1999 Rolling bearings — Thrust bearings with flat back faces — Boundary dimensions (*first revision*)	do
ISO 246 : 1995	IS 13405 : 1999 Rolling bearings — Cylindrical roller bearings, separate thrust collars — Boundary dimensions — Specification (*first revision*)	do
ISO 355 : 1977	IS 7461 (Part 1) : 1993 General plan of boundary dimensions for tapered roller bearings : Part 1 Single row bearings (*second revision*)	Technically Equivalent
	IS 7461 (Part 2) : 1992 General plan of boundary dimensions for tapered roller bearings : Part 2 Double row bearings (*second revision*)	
	IS 7461 (Part 3) : 1992 General plan of boundary dimensions for tapered roller bearings : Part 3 Flanged cups (*second revision*)	

(*Continued on third cover*)

Indian Standard

ROLLING BEARINGS — CHAMFER DIMENSIONS — MAXIMUM VALUES — SPECIFICATION

(Second Revision)

1 Scope

This International Standard specifies the maximum chamfer dimensions of metric series rolling bearings, for which boundary dimensions, including chamfer minimum dimensions, are given in other International Standards. Requirements for the maximum dimensions of the corresponding shaft and housing fillet radii are also given.

It does not apply to chamfers, for which dimensions are not specified, or for which other dimensions are specified in other International Standards.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 15:1981, *Rolling bearings — Radial bearings — Boundary dimensions — General plan.*

ISO 104:1994, *Rolling bearings — Thrust bearings — Boundary dimensions, general plan.*

ISO 246:1995, *Rolling bearings — Cylindrical roller bearings, separate thrust collars — Boundary dimensions.*

ISO 355:1977, *Rolling bearings — Metric tapered roller bearings — Boundary dimensions and series designations.*

ISO 464:1995, *Rolling bearings — Radial bearings with locating snap ring — Dimensions and tolerances.*

ISO 12043:1995, *Rolling bearings — Single-row cylindrical roller bearings — Chamfer dimensions for loose-rib and non-rib sides.*

ISO 12044:1995, *Rolling bearings — Single-row angular contact ball bearings — Chamfer dimensions for outer ring non-thrust side.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 radial direction chamfer dimension (of a bearing ring or washer): The distance between the imaginary sharp ring or washer corner and the intersection of the chamfer surface and the ring or washer face.

3.2 axial direction chamfer dimension (of a bearing ring or washer): The distance between the imaginary sharp ring or washer corner and the intersection of the chamfer surface and the bore or outside cylindrical surface of the ring or washer.

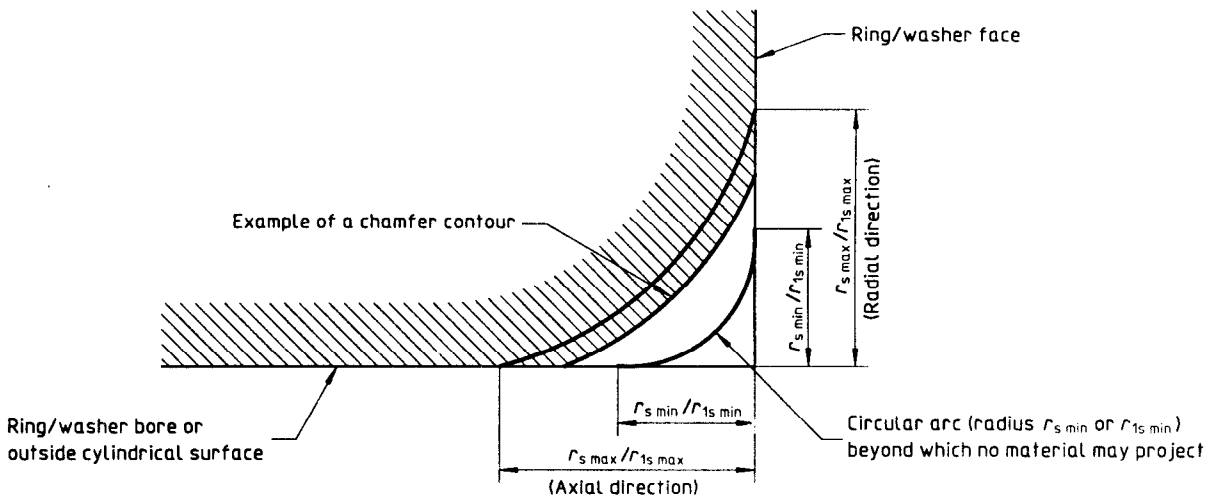
4 Symbols and dimensions

See figure 1 and tables 1 to 5.

The dimensions given in tables 1 to 5 corresponding to symbols shown in figure 1 are nominal dimensions unless specified otherwise.

5 Shaft and housing fillet radii

The largest permissible single shaft and housing fillet radius $r_{as\ max}$ should not exceed the smallest permissible single chamfer dimension of the corresponding ring or washer $r_{s\ min}$ or $r_{1s\ min}$.



d = bore diameter

D = outside diameter

$r_{s\ min}$, $r_{1s\ min}$ = smallest permissible single chamfer dimension of r_s, r_{1s} (single chamfer dimension)

$r_{s\ max}$, $r_{1s\ max}$ = largest permissible single chamfer dimension of r_s, r_{1s}

$r_{as\ max}$ = largest permissible single shaft and housing fillet radius.

NOTE — The exact shape of the chamfer surface is not specified, but its contour in an axial plane shall not be allowed to project beyond the imaginary circular arc, of radius $r_{s\ min}$ or $r_{1s\ min}$, tangential to the ring or washer face and the bore or outside cylindrical surface of the ring or washer.

Figure 1

Table 1 — Radial bearings in accordance with ISO 15

Dimensions in millimetres

$r_{s\,min}$ [1]	d	$r_{s\,max}$ [2]	
		Directions	
		radial	axial
0,05	—	0,1	0,2
0,08	—	0,16	0,3
0,1	—	0,2	0,4
0,15	—	0,3	0,6
0,2	—	0,5	0,8
0,3	$d \leqslant 40$	0,6	1
	$d > 40$	0,8	1
0,6	$d \leqslant 40$	1	2
	$d > 40$	1,3	2
1	$d \leqslant 50$	1,5	3
	$d > 50$	1,9	3
1,1	$d \leqslant 120$	2	3,5
	$d > 120$	2,5	4
1,5	$d \leqslant 120$	2,3	4
	$d > 120$	3	5
2	$d \leqslant 80$	3	4,5
	$80 < d \leqslant 220$	3,5	5
	$d > 220$	3,8	6
2,1	$d \leqslant 280$	4	6,5
	$d > 280$	4,5	7
2,5 [3]	$d \leqslant 100$	3,8	6
	$100 < d \leqslant 280$	4,5	6
	$d > 280$	5	7
3	$d \leqslant 280$	5	8
	$d > 280$	5,5	8
4	—	6,5	9
5	—	8	10
6	—	10	13
7,5	—	12,5	17
9,5	—	15	19
12	—	18	24
15	—	21	30
19	—	25	38

1) See clause 5 for maximum shaft and housing fillet radii.

2) For bearings with a width of 2 mm or less the $r_{s\,max}$ values for the radial direction apply also in the axial direction.

3) This chamfer dimension is not specified in ISO 15.

Table 2 — Radial bearings in accordance with ISO 246 and ISO 464 and in accordance with ISO 12043 for loose ribs

Dimensions in millimetres

$r_{1s\,min}$ [1]	d or D	$r_{1s\,max}$	
		Directions	
		radial	axial
0,2	—	0,5	0,5
0,3	d or $D \leqslant 40$	0,6	0,8
	d or $D > 40$	0,8	0,8
0,5	d or $D \leqslant 40$	1	1,5
	d or $D > 40$	1,3	1,5
0,6	d or $D \leqslant 40$	1	1,5
	d or $D < 40$	1,3	1,5
1	d or $D \leqslant 50$	1,5	2,2
	d or $D > 50$	1,9	2,2
1,1	d or $D \leqslant 120$	2	2,7
	d or $D > 120$	2,5	2,7
1,5	d or $D \leqslant 120$	2,3	3,5
	d or $D > 120$	3	3,5
2	d or $D \leqslant 80$	3	4
	$80 < d$ (or D) $\leqslant 220$	3,5	4
	d or $D > 220$	3,8	4
2,1	d or $D \leqslant 280$	4	4,5
	d or $D > 280$	4,5	4,5
2,5 [2]	d or $D \leqslant 100$	3,8	5
	$100 < d$ (or D) $\leqslant 280$	4,5	5
	d or $D > 280$	5	5
3	d or $D \leqslant 280$	5	5,5
	d or $D > 280$	5,5	5,5
4	—	6,5	6,5
5	—	8	8
6	—	10	10

1) See clause 5 for maximum shaft and housing fillet radii.

2) This chamfer dimension is not specified in ISO 246, ISO 464 and ISO 12043.

Table 3 — Radial bearings in accordance with ISO 12043, inner and outer ring non-rib sides only, and with ISO 12044

Dimensions in millimetres

$r_{1s\,min}$ [1]	d or D	$r_{1s\,max}$	
		Directions	
		radial	axial
0,1	—	0,2	0,4
0,15	—	0,3	0,6
0,2 [2]	—	0,5	0,8
0,3	d or $D \leqslant 40$ d or $D > 40$	0,6 0,8	1 1
0,6	d or $D \leqslant 40$ d or $D > 40$	1 1,3	2 2
1	d or $D \leqslant 50$ d or $D > 50$	1,5 1,9	3 3
1,1	d or $D \leqslant 120$ d or $D > 120$	2 2,5	3,5 4
1,5	d or $D \leqslant 120$ d or $D > 120$	2,3 3	4 5
2	d or $D \leqslant 80$ $80 < d$ (or D) $\leqslant 220$ d or $D > 220$	3 3,5 3,8	4,5 5 6

1) See clause 5 for maximum shaft and housing fillet radii.

2) This chamfer dimension is not specified in ISO 12043 and ISO 12044.

Table 4 — Tapered roller bearings in accordance with ISO 355, inner and outer ring back faces

Dimensions in millimetres

$r_{s\,min}$ [1]	d or D	$r_{s\,max}$	
		Directions	
		radial	axial
0,3	d or $D \leqslant 40$ d or $D > 40$	0,7 0,9	1,4 1,6
0,6	d or $D \leqslant 40$ d or $D > 40$	1,1 1,3	1,7 2
1	d or $D \leqslant 50$ d or $D > 50$	1,6 1,9	2,5 3
1,5	d or $D \leqslant 120$ $120 < d$ (or D) $\leqslant 250$ d or $D > 250$	2,3 2,8 3,5	3 3,5 4
2	d or $D \leqslant 120$ $120 < d$ (or D) $\leqslant 250$ d or $D > 250$	2,8 3,5 4	4 4,5 5
2,5	d or $D \leqslant 120$ $120 < d$ (or D) $\leqslant 250$ d or $D > 250$	3,5 4 4,5	5 5,5 6
3	d or $D \leqslant 120$ $120 < d$ (or D) $\leqslant 250$ $250 < d$ (or D) $\leqslant 400$ d or $D > 400$	4 4,5 5 5,5	5,5 6,5 7 7,5
4	d or $D \leqslant 120$ $120 < d$ (or D) $\leqslant 250$ $250 < d$ (or D) $\leqslant 400$ d or $D > 400$	5 5,5 6 6,5	7 7,5 8 8,5
5	d or $D \leqslant 180$ d or $D > 180$	6,5 7,5	8 9
6	d or $D \leqslant 180$ d or $D > 180$	7,5 9	10 11

1) See clause 5 for maximum shaft and housing fillet radii.

Table 5 — Thrust bearings in accordance with ISO 104

Dimensions in millimetres

$r_{s\,min}$ [1] or $r_{1s\,min}$ [1]	$r_{s\,max}$ or $r_{1s\,max}$
	Radial and axial directions
0,3	0,8
0,6	1,5
1	2,2
1,1	2,7
1,5	3,5
2	4
2,1	4,5
3	5,5
4	6,5
5	8
6	10
7,5	12,5
9,5	15
12	18
15	21
19	25

NOTE — The dimensions given above refer to:

a) back face/outside cylindrical surface chamfer of housing washer;

b) back face/bore surface chamfer of shaft washer of single direction bearings;

c) face/bore surface chamfers of central shaft washer of double direction bearings.

1) See clause 5 for maximum shaft and housing fillet radii.

(*Continued from second cover*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 464 : 1995	IS 11904 : 1999 Rolling bearings — Radial bearings with locating snap ring — Dimensions and tolerances (*first revision*)	Identical

The Technical Committee has reviewed the provisions of ISO 12043 : 1995 'Rolling bearings — Single-row cylindrical roller bearings — Chamfer dimensions for loose-rib and non-rib sides' and ISO 12044 : 1995 'Rolling bearings — Single-row angular contact ball bearings — Chamfer dimensions for outer ring non-thrust side', to which references are made in the text, and has decided that they are acceptable for use in conjunction with this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : No. LM 12 (0410).

Amendments Issued Since Publication

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